DOCUMENT RESUME

ED 441 659 SE 063 175

TITLE	Schoolyard Habitats: Planning Guide. People and Nature: Our Future Is in the Balance[TM].
INSTITUTION	National Wildlife Federation, Vienna, VA.
PUB DATE	1999-00-00
NOTE	25p.
AVAILABLE FROM	National Wildlife Federation, Schoolyard Habitats, 8925 Leesburg Pike, Vienna, VA 22184-0001. Tel: 703-790-4100.
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	*Conservation Education; Ecology; Elementary Secondary Education; *Environmental Education; *Habitats; Natural Resources; Science Education; Teaching Methods
IDENTIFIERS	*School Yards

ABSTRACT

This guide assists schools, teachers, students, and community members in the use of school grounds as learning sites for wildlife conservation and cross-curricular learning. Sections include: (1) "Schoolyard Habitats"; (2) "Widening the Classroom Walls"; (3) "The School and the Community"; (4) "Inspiring the Community"; (5) "Creating the Habitat Team"; (6) "Maintenance"; (7) "Site Inventory and Mapping"; (8) "Example of Site Inventory Process"; (9) "Identifying the Needs/Selecting the Site"; (10) "Assembling the Elements"; (11) "Schoolyard Habitats Designs"; (12) "Setting the Goals"; (13) "Reaching Out: Resources and the Community"; (14) "Fundraising Strategies"; (15) "Incorporating the Habitat in Cross-Curriculum Learning"; (16) "Schoolyard Habitats Certification Checklist"; and (17) "Resource Guide," including activities, "how to" guides, habitat planning and landscaping, environmentally-sensible landscaping, attracting specific wildlife groups, identification, habitats, and behavior, fundraising/grant sources, and on-line resources. (Contains 61 references.) (CCM)

Reproductions supplied by EDRS are the best that can be made
from the original document.

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL IN
MICROFICHE ONLY HAS BEEN GRANTED BY
S. Stowell
TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)
2B

ED 441 659

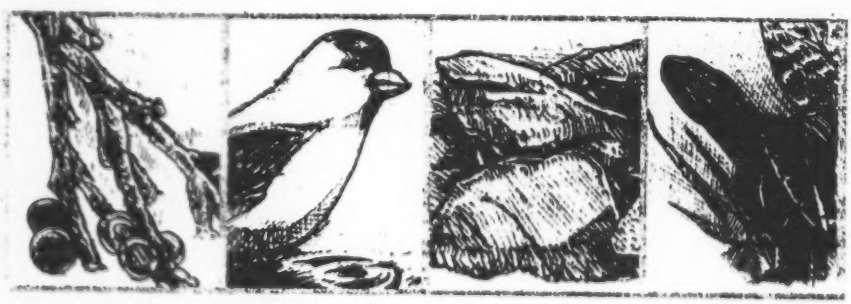
schoolyard habitats®

NATIONAL WILDLIFE FEDERATION®

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Planning Guide

The World of Nature As Your Classroom



People and Nature: Our Future Is in the Balance™

SE031375

BEST COPY AVAILABLE

NATIONAL WILDLIFE FEDERATION®

NWF Mission:

To educate, inspire and assist individuals and organizations of diverse cultures to conserve wildlife and other natural resources and to protect the Earth's environment in order to achieve a peaceful, equitable, and sustainable future.

Dear Friends:

The National Wildlife Federation™ (NWF) has encouraged educators and others in our school communities to create and conserve wildlife habitat since the inception of its **Backyard Wildlife Habitat™** program in 1973. The **Schoolyard Habitats®** project focuses specifically on assisting schools, teachers, students and community members in the use of school grounds as learning sites for wildlife conservation and cross-curricular learning. NWF recognizes the on-going efforts of schools across the country through a certification process. Certified schools provide essential habitat for wildlife, as well as use these sites as teaching tools integrated into the curriculum. To date, NWF has certified more than 750 schools nation-wide!

Throughout North America and in many other parts of the world, interest in using these outdoor teaching areas is increasing. **Schoolyard Habitats** projects offer many benefits such as: enhanced learning opportunities for all students (and educators too!), decreased costs pertinent to "field trips" and grounds maintenance, development of stronger ties to school communities, and a sense of local stewardship in our children for the Earth's resources.

Why should we make this effort to help songbirds, butterflies, and other wildlife with whom we share our communities? Habitat loss is the greatest threat to biodiversity – the grand variety of life forms that live on Earth. No matter where we are, we can take small actions in our daily lives to make a positive impact on our local environment. At our schools and learning centers, we have a chance, and perhaps an obligation, to put our youth in contact with the natural world. The **Schoolyard Habitats** project offers this opportunity while enhancing the quality of education in our schools.

We hope this Planning Guide will be a source of helpful hints and ideas as you begin the educational process of creating a habitat-based learning site at your school. The step-by-step guidelines outlined here will take you through the necessary avenues for creating a habitat team, setting goals, assessing your school grounds, and making important community connections. In addition to the information found in this booklet, we encourage you to visit the **Schoolyard Habitats** project under the **Backyard Wildlife Habitat** Home Page on the World Wide Web at **http://www.nwf.org**. The special **Schoolyard Habitats** section provides opportunities to exchange information with others, access excellent resources, and to connect with a list of NWF certified **Schoolyard Habitats** sites.

We thank you for your interest in this NWF project and look forward to receiving your school's application for certification, as well as your participation in our program for years to come. The efforts you are making to bring the natural world into the lives of people in your school community will be of benefit to all involved.

Good luck with your project! We look forward to receiving your application soon.

Sincerely,

Craig Tufts
Chief Naturalist

Stephanie Stowell
Schoolyard Habitats Project Coordinator

Schoolyard Habitats®

Schools and learning centers across the country are acknowledging the growing problem of habitat loss in our world, and as a result, are acting on behalf of wildlife on their own school grounds. The aim of the National Wildlife Federation™ **Schoolyard Habitats®** project is to encourage and work with these schools in the conservation and restoration of wildlife habitat.

Habitat-based learning sites meet the needs of wildlife by providing the four critical habitat components: food, water, cover, and places to raise young.

Additionally, the creation of a **Schoolyard Habitats** site meets the needs of students, teachers and the school community. The evolution of a habitat site is an ongoing learning and growing process for all involved. It offers unlimited and diverse opportunities for active cross-curriculum learning and a new and creative outlet for meeting the requirements of national and state Standards of Learning.

Widening the Classroom Walls

Habitat-based learning sites provide educators and students with the opportunity to draw upon each of their five senses. The site can be thought of as a new resource for on-site field trips and is perfectly suited for exploration by investigative, eager minds that may be stifled by the traditional indoor classroom setting. Often, the transition from the indoor classroom to the "outdoor classroom" (a name often given to the **Schoolyard Habitats** site) may be what creates the spark of interest in inattentive children. An outdoor classroom area may meet the needs of a variety of different learning styles, and allows students to appreciate the strengths and weaknesses of others, while acknowledging their own.

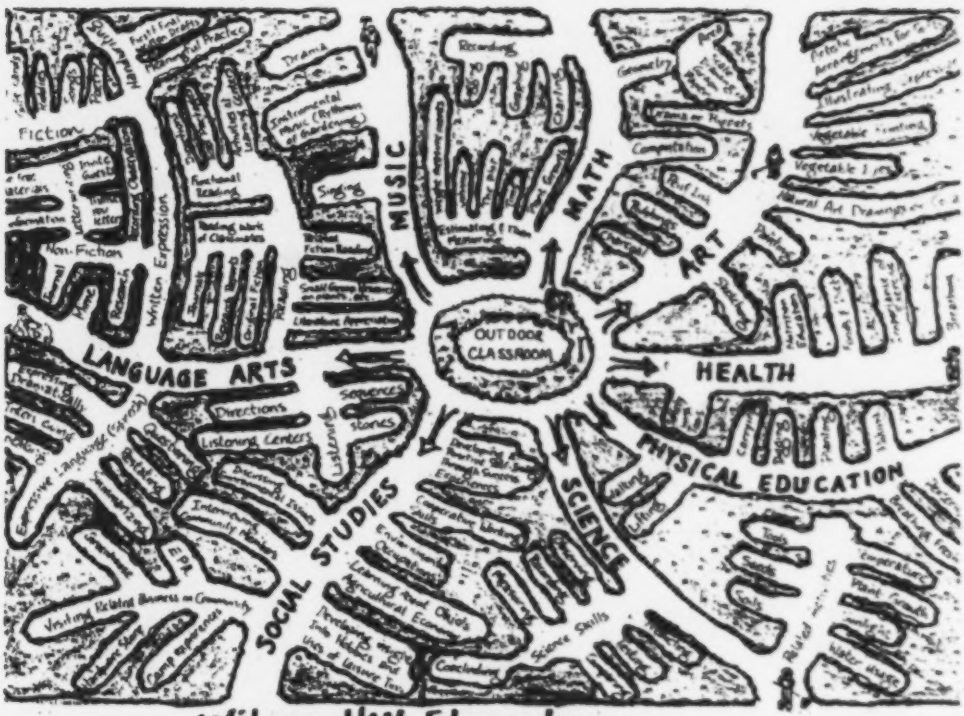
In the past, observing nature and participating in nature education activities in the outdoor classroom were often considered opportunities only for teaching science and natural history. Today, outdoor classrooms are used to teach diverse disciplines – history, math, English, art, and many more. A **Schoolyard Habitats** project can develop environmental awareness and, in many cases, may prompt a lifelong interest and involvement in local and global conservation issues.

In addition to cross-curricular learning opportunities, outdoor learning sites provide a unique and effective way to meet national and local standards of learning. For example, what better way for your students to study the life cycles of organisms and their environments (National Science Standards, Life Science, Content Standard C, K-4) than watching Monarch butterfly larvae emerge from their eggs on milkweed planted by your students in your very own meadow! Or how about using your school grounds as an opportunity for your students to describe personal connections to place (National Social Studies Standards, Performance Expectation IV, Early Grades) – the opportunities are endless.

**See page 17 "Incorporating the Habitat in Cross-Curricular Learning" for more ideas*

The Benefits of Field Trips to an On-site Schoolyard Habitats Project

- Immediate accessibility
- Maximized teaching time
- Minimized liability concerns
- Cost savings
- Continuous availability
- Reduced need for additional supervision (volunteers)



Wilson Hill Elementary

Compliments of: National Gardening Association, 180 Flynne Ave., Burlington, VT 054011; 1-800-538-7476; http://www.garden.org

The School and the Community

While direct student participation is an essential element of a successful **Schoolyard Habitats** project, it is equally as important to involve the internal school community and surrounding community at-large. You will find that the creation of a habitat-based learning site lends itself to involvement of other individuals within the school and the resources and expertise of the external community as well – you shouldn't try to do it alone!

Since schools are the learning grounds for the next generation and often serve as the focal point for community activity and unity, it seems natural for communities to channel their energies into creating something beneficial at a school. A small amount of effort directed toward the conservation of wildlife habitat on school grounds can produce positive outcomes for wildlife and people alike. Development of a **Schoolyard Habitats** project fosters a sense of ecological awareness, stewardship, and "big picture" thinking among children, teachers, administrators, and community participants.

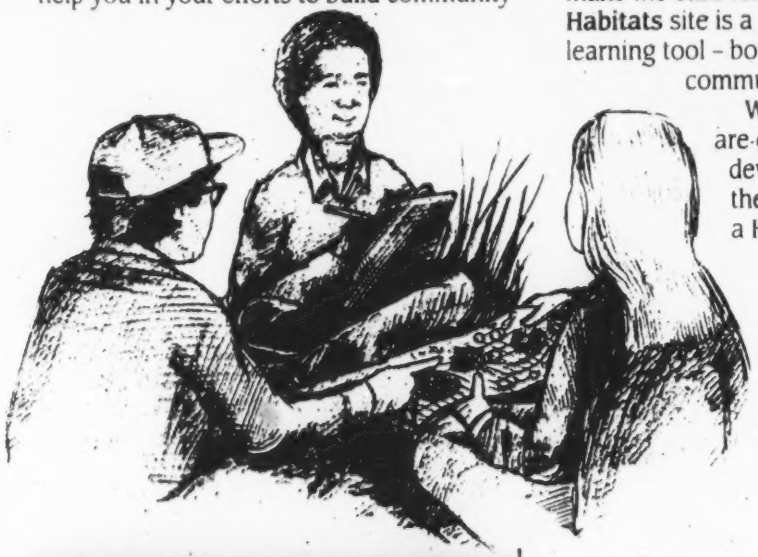
BEST COPY AVAILABLE

Inspiring the Community

The benefits of **Schoolyard Habitats** projects are many and varied, but in order to be successful, community involvement and support is essential. Involvement by local resource professionals will provide invaluable expertise, as well as enhance the credibility of your project. To build support for the project, introduce the school community to the contributions that the habitat site can make to enrich the school's educational offerings. Additionally, the **Schoolyard Habitats** site can be a benefit to the entire community as a public place for all to visit!

The National Wildlife Federation can help you in your efforts to build community support. Our Backyard Wildlife Habitat video details our habitat projects and why they are important. Additionally, the video offers testimonials from students and teachers involved in habitat sites on their school grounds. The video might be a great addition to your next PTA/PTO meeting and may result in support from these groups. Additionally, we have access to resources that may be of assistance to you, and can help put you in touch with schools in your area that have successfully certified their schools through NWF. The NWF website **www.nwf.org** has a number of articles that make the case for why a **Schoolyard Habitats** site is a beneficial teaching and learning tool – both for students and the community at-large.

When community members are committed to the development of a habitat, the next step is to assemble a Habitat Team.



Environmentally Sound Landscape Choices

- Grow native plants
- Reduce turfed areas
- Reduce pesticide use
- Reduce fertilizer use
- Reduce water consumption

Traditionally, school grounds have not been landscaped for wildlife. Common features of the schoolyard are often turfgrass or paved surfaces. Careful planning and planting of a **Schoolyard Habitats** site may transform the grounds of a school campus into an area that invites and supports wildlife and learning. The schoolyard transformation is often a result of environmentally-sound landscaping choices. From a cost-savings standpoint, these choices (like those listed to the left) will result in reduced landscape maintenance and energy expenditures.

Creating the Habitat Team

The Habitat Team is the working committee that acts as the driving force behind the development and continuity of a **Schoolyard Habitats** project. A dedicated team is necessary to tackle the planning, fundraising, publicizing, building, and planting involved in the development of a habitat-based learning site. The diverse skills and support each member of the Habitat Team brings to the project are invaluable to the habitat's overall conception, construction, and maintenance. To have a solid foundation, the Habitat Team should include representatives from each of the following school community groups.

Students

Student leadership and initiative is the driving force behind a successful habitat project. The components, structure, and goals of the **Schoolyard Habitats** project should be defined by student input and ideas. Students serve as a tremendous source of enthusiasm and creativity for such a project. Student involvement allows them to develop a tremendous sense of ownership of the project and a feeling of empowerment.

Educators

Educators are incredible sources of inspiration and guidance, but students must ultimately direct the project. In this process, educators may serve as mentors, resource aides, facilitators, co-workers, and cheerleaders. They must strike a balance between taking the lead to push the project forward and stepping back to allow for student initiative.

Administration

Support and participation of school officials is crucial. Administrators can offer insight into budget concerns, future building plans, liability issues, community relations, and funding opportunities. School officials react favorably to projects that improve the school's image, offer cost savings, provide teaching opportunities across the curriculum, and incorporate student leadership and enthusiasm for the project.

Maintenance Staff

It is critical that maintenance staff have a clear understanding of the purpose and scope of the habitat project. Maintenance staff possess knowledge about the school grounds and equipment needed for project construction and maintenance. Convey to the maintenance staff the important role they play and critical skills they bring to the long-term success of the project.

Parents

Parents enthusiastically support projects that excite and stimulate their children. Many times, parents find their own lives enriched through involvement in a **Schoolyard Habitats** project. Their enthusiasm and resources – personal and professional – prove to be valuable assets to draw upon during the life of the project. The role of the parent in the establishment of a

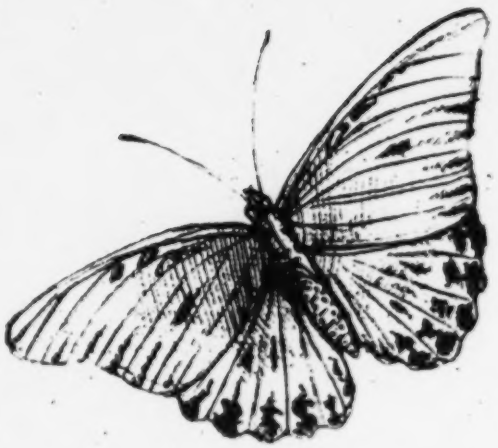
habitat project is critical because it extends beyond the school into the home and the community.

Local Businesses and Civic Organizations

These community partners can offer technical support, material contributions, small grants, volunteers, and other in-kind donations. As a result of their participation, these groups gain positive recognition in the community and in turn, may strengthen their customer or member base. Always acknowledge contributions to a **Schoolyard Habitats** project publicly and with letters of appreciation. Involvement by local businesses and organizations also serves to strengthen school/community relationships.

Resource Professionals

Resource professionals offer knowledge and experience to a **Schoolyard Habitats** project that may be difficult to find elsewhere. They bring their expertise to the planning and development of specific habitat components. These individuals may serve as positive role models and mentors. Through workshops and school assemblies, their involvement with the project may open the eyes of the students and others in the school community to new career directions.



An essential goal of the **Schoolyard Habitats** project is to reflect the ideas brought forth by the students, while attempting to incorporate those of the larger school community. Remember, student involvement and leadership are vital to the habitat's success!

After defining a clear and workable goal, the Team must establish a time line with estimated planning, budget and material needs. This time line should also identify areas where assistance is needed, so the Team can develop a "wish list". After completing a site inventory, revise the wish list to include identified gaps in material and technical needs.

Maintenance

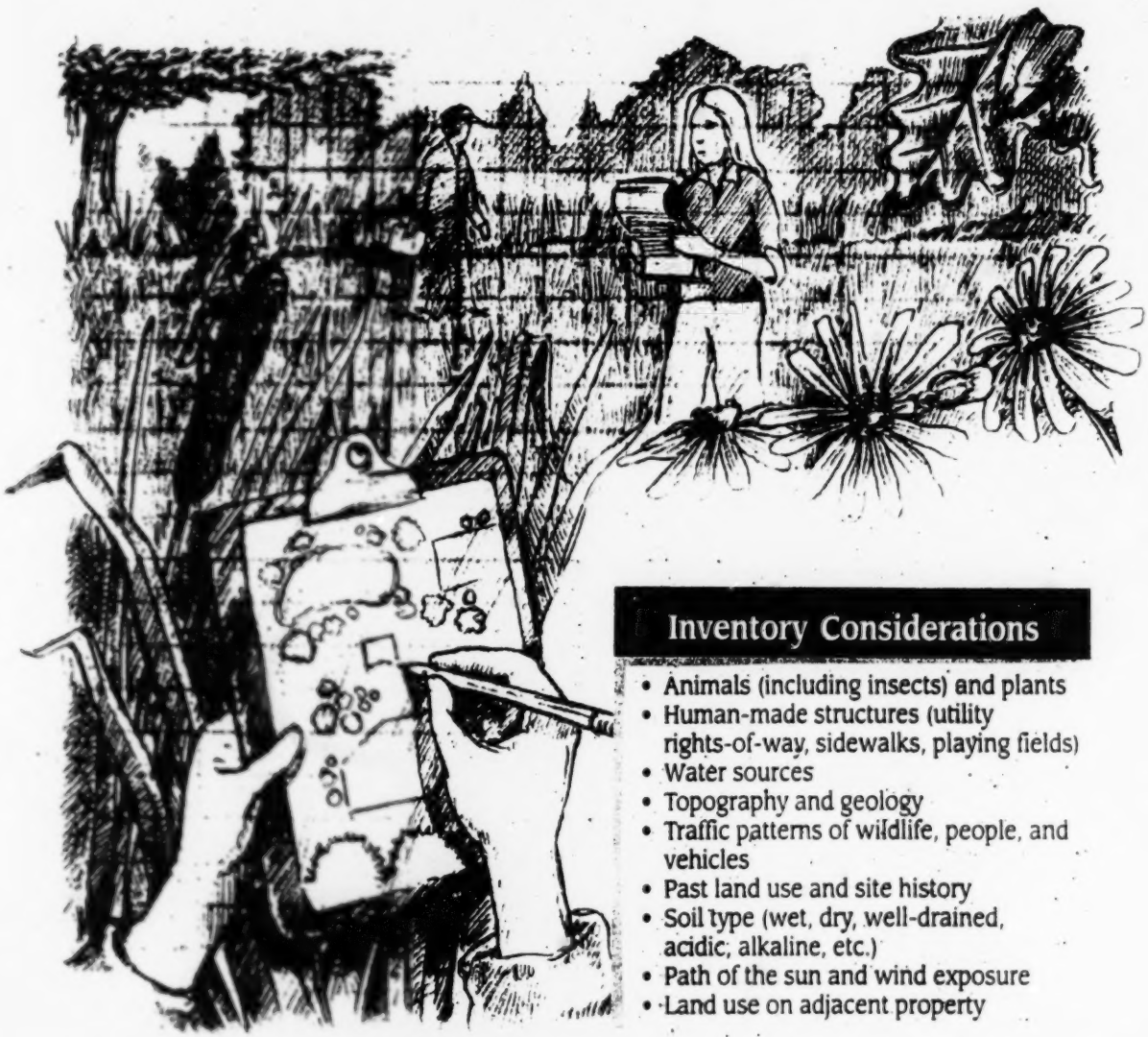
By creating a habitat-based learning site at your school you are lessening the need for traditional maintenance. However, it is still important that you keep your habitat area healthy and happy. Your habitat will prove to be a labor of love, and you should have no shortage of people interested in maintaining the site. Students will be largely responsible throughout the school year. However, you still need to address who will take care of watering, weeding and general upkeep of the habitat site over the summer months when there are fewer people at the school. Look into summer school programs to see if any of these teachers are interested in using the habitat site for teaching, they, in turn, can maintain the site. Perhaps neighbors would be available to help out. You may even be able to organize teams of students and parents to take care of summer duties. Watering is not only important during the summer months, it is important to tend to your habitat site during times of drought, as well as in the first year when your site is becoming established.

Attention to maintenance issues is an extremely important aspect of creating a **Schoolyard Habitats** site - it ensures that students can return to school in the fall to continue the enjoyment and learning opportunities of their wildlife habitat site.

Site Inventory and Mapping

A site inventory is the first step and an important educational process in the development of a **Schoolyard Habitats** site. This may be the first time Habitat Team members step outside with a critical eye to assess the school grounds for its potential as wildlife habitat. In this phase of the habitat project, Team members and students go outdoors to familiarize themselves with the schoolyard. A site inventory is a list of EVERYTHING (natural and human-made) that exists or occurs on your school grounds.

Your site inventory should be as comprehensive as possible. The Habitat Team will need to look at the physical elements of your schoolyard (soil, topography and drainage patterns, etc.) and ecological components (plants and animals



Inventory Considerations

- Animals (including insects) and plants
- Human-made structures (utility rights-of-way, sidewalks, playing fields)
- Water sources
- Topography and geology
- Traffic patterns of wildlife, people, and vehicles
- Past land use and site history
- Soil type (wet, dry, well-drained, acidic, alkaline, etc.)
- Path of the sun and wind exposure
- Land use on adjacent property

already on the site). In addition to the natural characteristics of your site, it is important to make note of all human influences present at your site. These influences include, buildings and asphalt areas, to name a few.

Look beyond the school grounds, as well. Who shares a common boundary with your school? Perhaps you have a city park next door and can connect to habitat that is already there. Or maybe you can work with residential neighbors to create connecting habitat corridors.

In addition to the physical and ecological inventory, it is important to consider the history of the site. How was the land used before the school was there? What kind of ecosystem was present? An historical inventory can be fascinating and is another great tool for involving the community as students interview long-time community residents and conduct other research.

Record observations so they can be easily accessed and understood for planning, charting progress, and teaching. The awareness, understanding, and data that result from these investigations are

essential to project planning.

To get a picture of what is currently at the school site and to aid in the selection of future projects, draw a map of the property. You should start by creating a base map including the school building and other human-made structures and influences.

This should be a creative process involving students every step of the way. The site inventory and subsequent mapping activities will help you and your students make a "big picture" of all the observations and data collected during your site inventory. An effective mapping technique is to use overlays or tracing paper. Groups of students can be assigned different mapping projects and the information collected can then be overlayed on the original base map. (An example of this process is given on pages 10 and 11.)

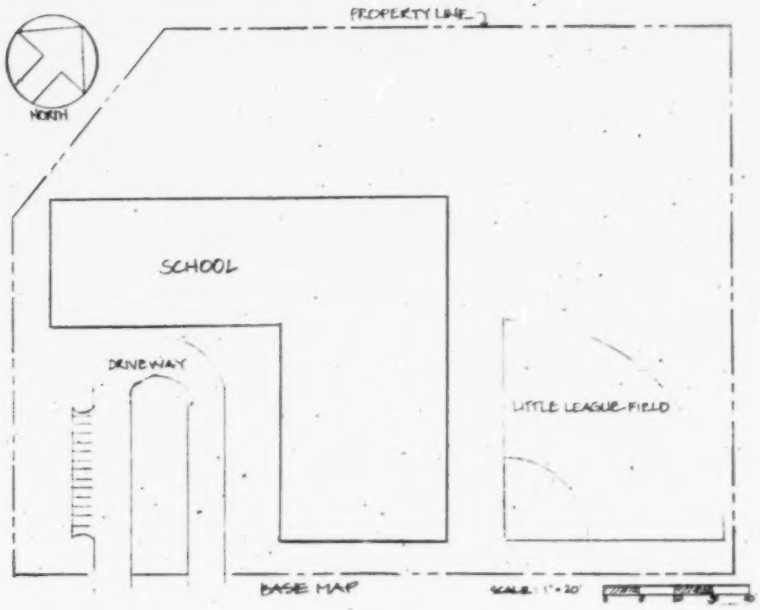
These mapping projects can also be used to chart the habitat's progress and for submission when you apply for the NWF **Schoolyard Habitats** certification. Remember, you don't need to be an expert or a professional landscape designer to map and observe your habitat site. It is more important that you create the connection between your students and the site through the inventory process than it is to have a professional site design.

** For more information about the activities mentioned above, refer to the Resource Guide located in the back of this booklet.*

Example of Site Inventory Process

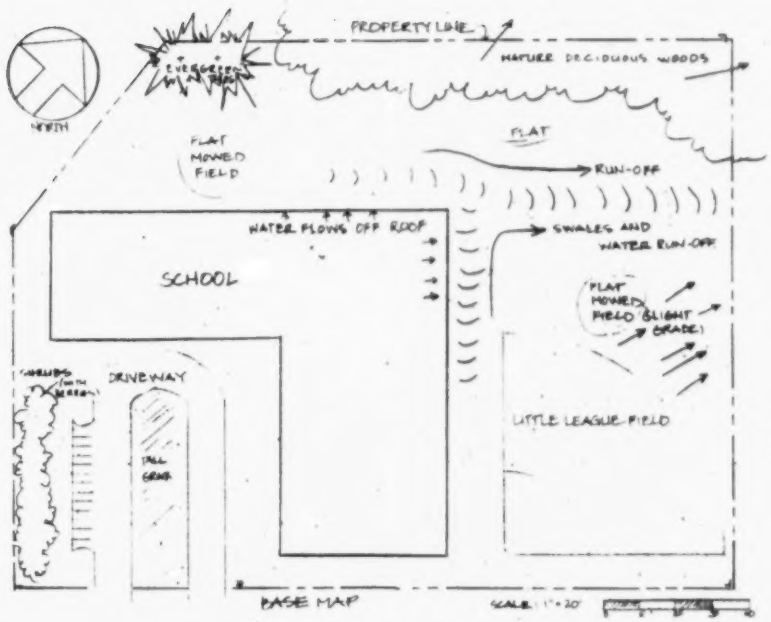
Base Map

- ❑ make note of human-made structures and features could also include elevation contours



Water Flow and Existing Vegetation

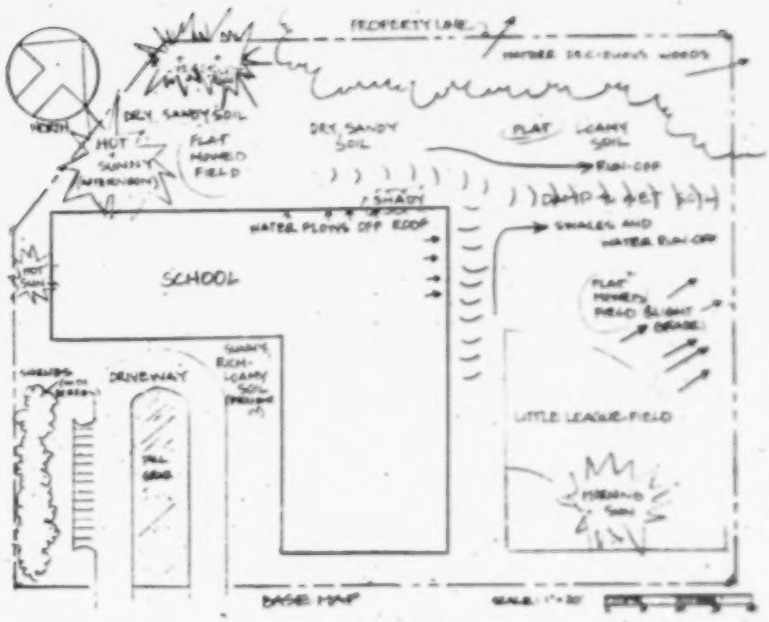
- ❑ observe contours of the site and water flow during times of rain, make note of areas where water drains or settles
- ❑ make note of existing vegetation including; deciduous vs. evergreen trees and shrubs (you may want to identify specific types), long vs. short grass, natural vs. landscaped areas



BEST COPY AVAILABLE

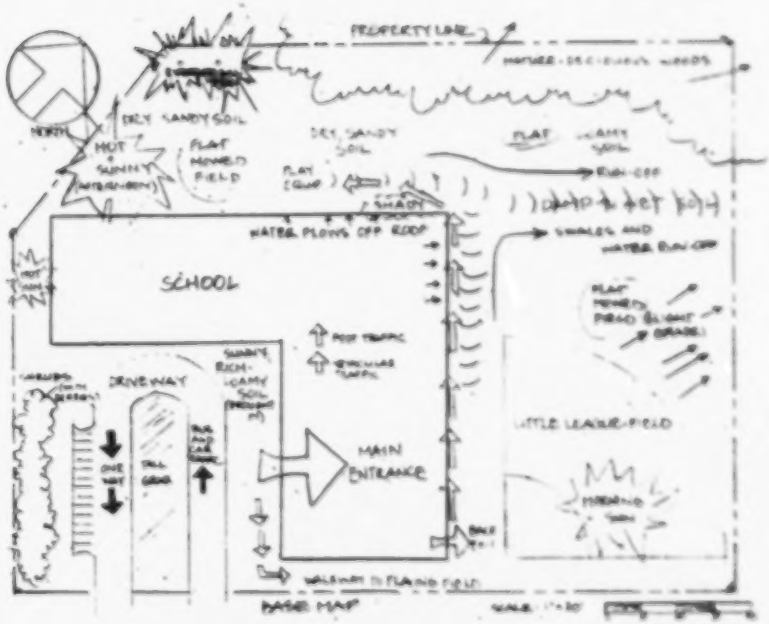
Soils, Sun and Shade

- ❑ take soil samples from different areas of your school grounds and compare color, texture and moisture content
- ❑ study sun/shade/ temperature changes throughout the day and across time



Traffic Patterns/ Human Use

- ❑ study foot, auto, and bicycle traffic on your school grounds
- ❑ make note of existing pathways (formal and informal)



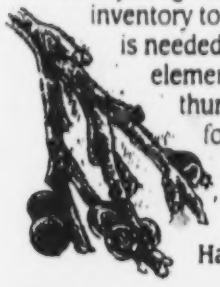
BEST COPY AVAILABLE

Identifying the Needs/ Selecting the Site

After the initial site inventory is complete, the next step is to chose a location for your habitat site. You will want to keep in mind the needs of wildlife, but will need to consider human needs, as well. You want your site to be accessible for classes to use and for community members to visit. You also want to avoid planting your habitat site in the middle of a high-use pedestrian traffic area. These are just a couple of considerations to make when chosing your site.

The next step is to identify the existing wildlife habitat components and to determine which elements must be preserved, enhanced or developed. Some areas of your schoolyard might already be visited by wildlife and these areas may naturally provide some or all of the essential habitat elements. In such cases, you should seriously consider conserving or restoring what already exists. It is equally as important to restore and conserve natural habitat areas as it is to create new ones.

Keep in mind the four essential elements of a habitat - food, water, cover, and places to raise young. Use the inventory to determine what is needed to better provide these elements. As a general rule of thumb, the greatest diversity of food and cover will attract the greatest number of birds and other animals to your **Schoolyard Habitats** site.

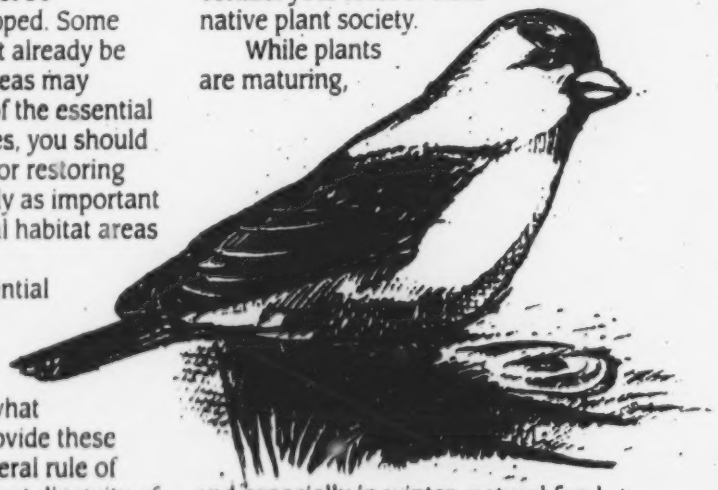


Food

The ideal wildlife management plan uses locally native vegetation to supply as much food as possible to meet the year-round needs of many species. Shrubs, trees, and other plants produce foods, such as acorns, nuts, berries, and other seeds. Leaves, buds, catkins, nectar, and pollen are equally important food sources.

Remember that locally native plants are the basis for the natural food chain in any given ecosystem, it is absolutely essential that any **Schoolyard Habitats** plantings consist of regionally native plant species, including trees, shrubs, perennials and annuals. Plants native to the soils and climate of your specific area provide the best overall food sources for wildlife and at the same time require less fertilizer, less water, and less effort in controlling pests. Native plants may support 10 to 50 times as many species of wildlife as non-native plants. To find out what plants are native to your area, contact your local or state native plant society.

While plants are maturing,



and especially in winter, natural food sources can be supplemented with feed. The best foods for bird feeders are sunflower, niger, safflower, and proso millet seed, cracked corn, meal worms and suet. In warm months, a special dilution of four parts water to one part sugar in hummingbird feeders supplement the nectar and insects that flowers provide. Contact a Cooperative Extension office, native plant society, local garden center, state non-game wildlife program, or nature center for recommendations about the best local native wildlife plants for your region.

Water

Throughout the year, wildlife needs water, both for drinking and bathing. Water can be supplied in a birdbath, a small pond, wetland or a marsh, a waterfall powered by a recirculating pump, a shallow dish, or through a dripping hose. While vegetation holds droplets from rain or morning dew, a more constant, reliable source of water is preferred in a wildlife habitat area.

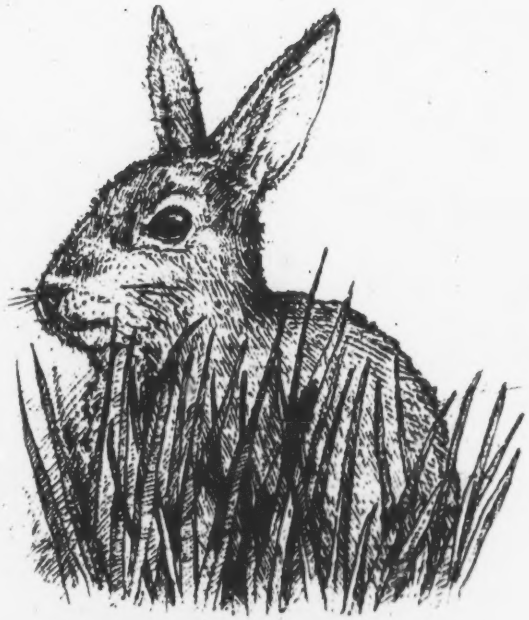
An elevated birdbath may protect birds from cats and other predators, and can be an attractive addition to the **Schoolyard Habitats** site. A shallow, wide-rimmed dish will provide water for small animals when placed on the ground near shrubbery or other cover. A small pond set into the ground can provide water for drinking and bathing as well as cover and, perhaps, reproductive areas for small fish, amphibians, and insects.

In summer heat, be sure to replace water regularly and to keep birdbaths clean. In winter, when temperatures drop well below freezing, it is helpful to provide a birdbath heater or remove ice in the morning and refill with water daily.

Cover

Just as people need the shelter of a house, wildlife needs protective cover. Plants that offer food can also provide cover. Densely branched shrubs, hollow logs, rock piles, brush piles, stone walls, evergreens, meadow or prairie patches, and water provide cover for many animal species.

The ideal wildlife habitat area includes plants ranging in size and density from ground cover to tall, mature trees, including both evergreen and deciduous plants. This variety of plant life provides birds and other animals with appropriate cover for feeding, hiding, courting, and nesting activities.

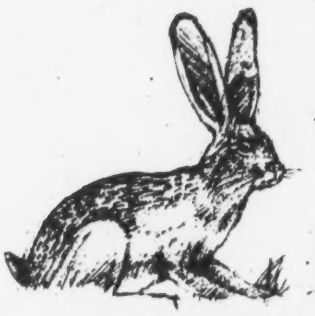


Places to Raise Young

One specific property of cover is its use as an area for courtship and for nurturing young animals. To make your wildlife habitat complete, incorporate safe areas for breeding and egg-laying; such as specific native plants upon which butterfly caterpillars depend, and the security that small mammals find in a brush pile.

In providing places to raise young, consider both vegetation and human-made devices. Attach bird houses and nesting shelves to posts, trees, or buildings. Maintain as many snags (dead, standing trees with hollow cavities) as possible. If den trees aren't available, erect bat and squirrel boxes for safe rearing areas. Plant dense pockets of shrubbery to provide safe areas for many species of birds to nest.

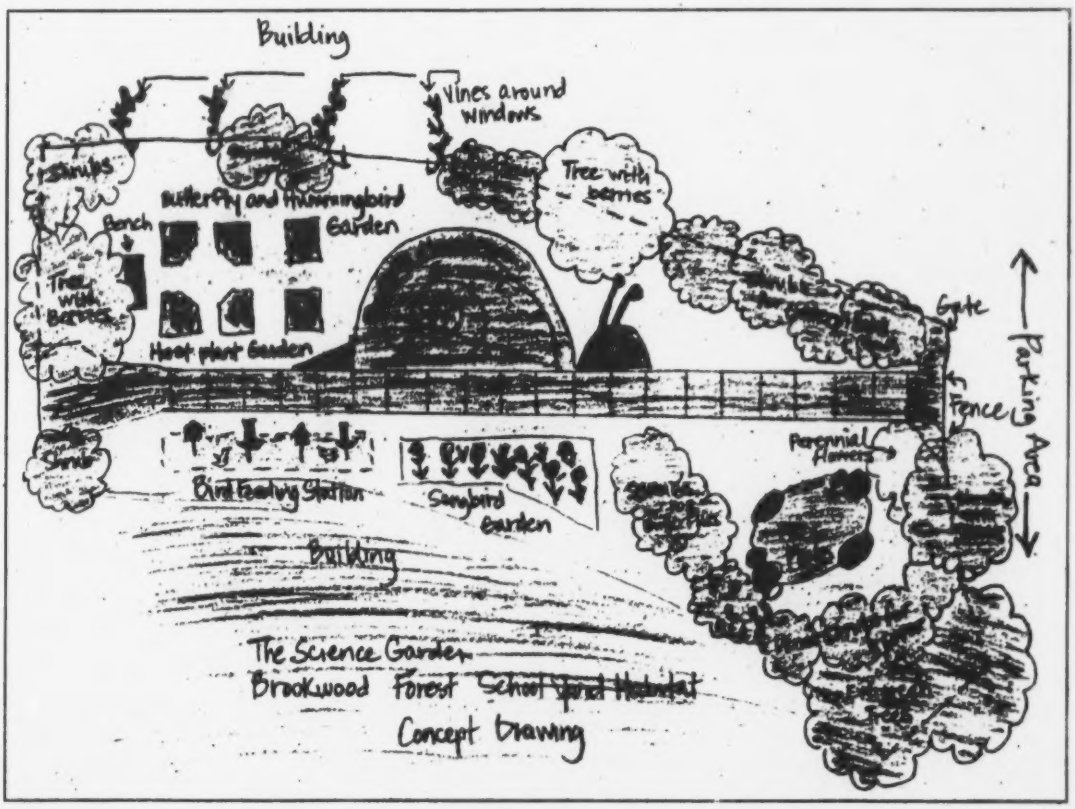
Some of our most interesting animals require a body of water as a safe haven for their young. Many salamanders, frogs, toads, and insects, like dragonflies and water boatmen, begin life in water and are unlikely to prosper in your area without the safe, healthy water environments that a stream or small pond can offer.



Assembling the Elements

Hundreds of schools and learning centers throughout the United States have developed **Schoolyard Habitats** projects. The following landscape designs may provide some ideas for habitat planning and development. Actual planting and construction of all habitat features at these sites may represent three to five years of efforts by the school communities involved.

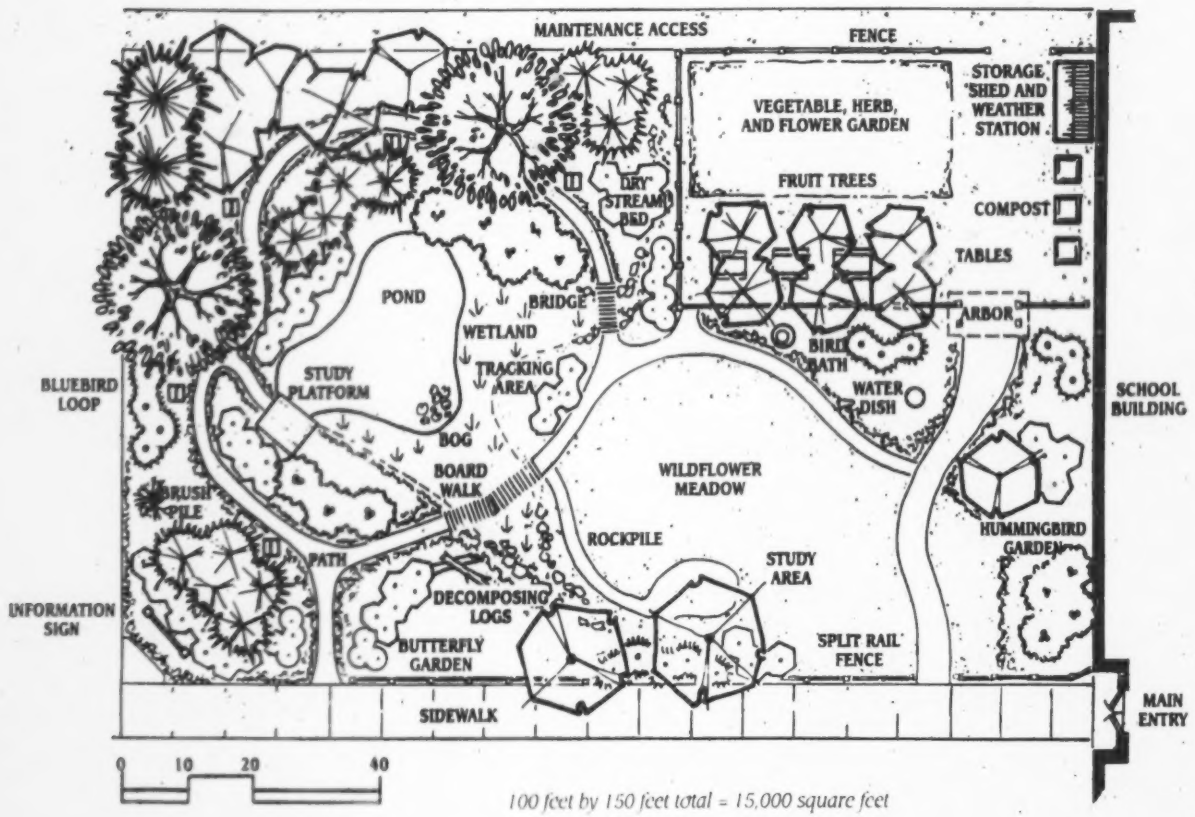
Remember you don't need to be an "expert" and a professional site map is not necessary. Each site will have different assets and constraints, and will result in a unique combination of elements that are suitable for your particular schoolyard.



Adapted with permission from Habitat Designs, Inc.

BEST COPY AVAILABLE

Schoolyard Habitats Designs



Setting the Goals

The next task of the Habitat Team is to define and set clear and attainable project goals. The construction of a **Schoolyard Habitats** project may seem daunting, but it won't be overwhelming if it's developed in phases. Long-term goals are essential. However, be sure to set short-term goals that are readily accomplished. The ongoing nature of these projects allows for additional time to locate funding and materials. With each phase of habitat development, important lessons are learned.

BEST COPY AVAILABLE

Reaching Out: Resources and Community Outreach

The steps to create a **Schoolyard Habitats** project begin with team-building, inventorying and mapping the site, and setting goals. The next phase involves getting the materials needed, community outreach, planting, and construction. Additionally, it will be important to involve the greater school community to secure financial, technical, and other support. It is important to remember that money does not need to be a limiting factor to the success of your project. By reaching out to the community you will be amazed at the amount of in-kind donations and volunteer support you can obtain.

You may find assistance in the community from a wide variety of sources: landscape architects ready for a new challenge; local businesses willing to donate plants, landscape materials, and their expertise; garden and civic clubs excited to offer their knowledge and hands-on involvement. An effective means of obtaining donations/resources is letters generated by the students. Local businesses and organizations are more prone to giving as a result of requests directly from students.

Where to Look — Community Resources

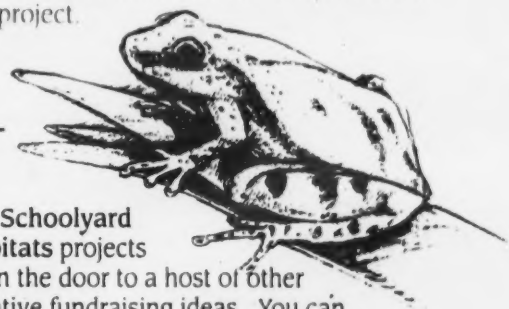
- Cooperative Extension Service
- School PTA/PTO
- Foundations
- Endowment funds
- School board of education
- Soil and Water Conservation District
- Resource management agencies
- Conservation and environmental groups
- Colleges and universities
- Garden clubs
- Federal, state and local agencies
- Corporate grantors
- Businesses

(Adapted with permission from *Guidelines and Features for Outdoor Classrooms,* Indiana Department of Natural Resources, Division of Forestry.)

Time and effort are involved in locating these individuals or groups, but their material contributions, in-kind support, and resource connections are invaluable to the project.

Fundraising Strategies

While in-kind donations and community resources are the life-line of a successful **Schoolyard Habitats** project, sometimes it is necessary to secure monetary support, as well. Local and Federal agencies often have grant programs to fund educational projects focusing on wildlife and habitat issues. Additionally, many private foundations and non-profit organizations have money for such projects. Listed in the Resource section of this planning guide, you will find sources of national level grants. Please visit the NWF web site **www.nwf.org/habitats** for further ideas and regional grant opportunities.



Schoolyard Habitats projects open the door to a host of other creative fundraising ideas. You can always rely upon the tried and true car wash or bake sale. Or better yet, appeal to the community to "adopt" a plant in your habitat site, or sell engraved bricks to be placed in a garden wall, or maybe stepping stones in your habitat area. The options are endless and provide an opportunity to be creative, once again.

BEST COPY AVAILABLE

Incorporating the Habitat in Cross-Curriculum Learning

The time and effort dedicated to making the connection between school curriculum and the **Schoolyard Habitats** project is just as critical as that invested in the planning and creation of the habitat site itself. Habitat sites offer constant teaching and learning opportunities, not just for science classes, but for math, language arts/English and art, as well. This curriculum connection is vital to the longevity of the **Schoolyard Habitats** project at your school.

Help in making the habitat connection can be found in many quality curricula series. NWF's classroom education program, Animal Tracks®, has created *Action Packs* activity guides. Additionally, NWF's *Ranger Rick's NatureScope®*, and Project WILD and Project Learning Tree (PLT) activity guides are filled with useful activities. NWF, Project WILD, and PLT offer workshops to familiarize educators with many of these materials.

Initially, curriculum connections are most likely to be made by individual teachers for specific classroom projects. However, the integration of your **Schoolyard Habitats** site into all subjects, while meeting state and local curriculum requirements should be emphasized.

Take the first steps. Begin using the habitat as one of **your** teaching tools. The list that follows includes sample activities that may encourage creative learning.

Mathematics

- Measure/calculate plant growth rates and flower numbers
- Calculate the area of the habitat
- Estimate the canopy area of a tree
- Calculate cost savings from reduced maintenance of the land used as a habitat area

Social Studies

- Research past land use of the school site
- Study local Native American culture and the use of foods and medicinal herbs
- Make the link to local/state/national conservation policy and decision-making
- Establish and maintain vegetable and herb plots

Art

- Make leaf prints
- Use plant materials for dyes and paints
- Study the history and personalities involved in wildlife art and photography
- Sketch flora and fauna – create personal field guides
- Create stepping stones to be laid in the habitat site
- Create statues for display in the habitat

Science

- Study ecological concepts and biological processes such as plant distribution (native vs. non-native), food web, and photosynthesis
- Learn about regional weather patterns affecting the habitat
- Investigate microclimates influencing the animals and plants in the site

Music

- Create musical instruments from natural items (acorn caps, grass blades, etc.)
- Listen to the sounds of nature and make seasonal recordings of natural sounds from your habitat
- Listen to and discuss songs and other musical forms that reflect the natural world

Language Arts

- Read and analyze natural history authors
- Involve students in keeping nature journals
- Write and perform a play based on student experiences and observations of life in the habitat
- Illustrate language concepts and forms with examples and exercises based on habitat experiences (haiku, onomatopoeia)
- Practice writing skills through exercises related to habitat development i.e., thank you letters, invitations, project newsletters, fundraising and grant writing projects, radio and television scripts, public service announcements to local newspapers.

These suggestions are a very small representation of the cross-curricular opportunities that the Schoolyard Habitats project offers educators and students. Let your imagination and creativity run wild! Watch the positive changes in your students as they begin to learn from and in the habitat.

Schoolyard Habitats® *Certification*

Once you have developed and implemented your **Schoolyard Habitats** plan, have your project certified as an official **Schoolyard Habitats** site. School communities who have created a wildlife habitat-based learning site may apply for certification by completing the application form included with this booklet. Send it to:

Schoolyard Habitats Project
National Wildlife Federation
8925 Leesburg Pike
Vienna, VA 22184-0001

Your application will be reviewed by NWF staff to see that application criteria have been met. It isn't necessary to achieve a full-grown habitat before seeking certification. Whether your habitat has just been developed or has been in place for years, all efforts will be valuable to wildlife.

When your habitat is certified, you will be sent a Certificate of Achievement from the National Wildlife Federation. Your habitat will be assigned its own unique number and it will be entered in our computer-based **National Register of Schoolyard Habitats Sites**. You will also receive the quarterly *Habitats* newsletter and information about how to stay active in the program. An announcement about your achievement will be sent by NWF to local news media.

If you have questions about the certification process or about completing your application, please contact the **Schoolyard Habitats** project at 703-790-4582 or via e-mail at stowell@nwf.org.

BEST COPY AVAILABLE

Schoolyard Habitats® Certification Checklist

❑ **Involve the community and create the "Habitat Team"**

- ❍ Inform the school community and the community-at-large about your plan to create a habitat-based learning site at your school
- ❍ Include at least one representative from the following groups to be on the "team"

Teachers (other than yourself):

_____

Administration:

_____

Maintenance Staff:

_____

Parents:

_____

Local Business/Civic Organization:

_____

Resource Professionals:

_____

❑ **Conduct a site inventory and map your schoolgrounds**

- ❍ Record all natural and human-influenced features (see Inventory Considerations p. 8)
- ❍ Research historical land uses and make note of land uses on adjacent properties
- ❍ Photograph your site
- ❍ Produce a map of the schoolground

❑ **Identify needs and select a specific site**

- ❍ Review all data collected during the site inventory and mapping process. Make note of habitat elements your schoolyard already provides and species of wildlife already visiting your schoolyard. What areas do they visit most often? What plants and natural features (i.e. dead tree, rock pile, pond) are they drawn to?
- ❍ What other wildlife would you like to attract? Research to make sure your ideas are realistic based on your climate, etc.
- ❍ Select a site on your schoolgrounds that takes advantage of naturally occurring habitat elements, is near a water source, and is convenient for classes to use. (Be realistic...select a smaller site now, you can always expand later!!)

❑ **Set the goals of your habitat project**

- ❍ Define the expected outcomes of your habitat project
- ❍ Create a project time line
- ❍ Delegate responsibilities to all members of the Habitat Team
- ❍ Make a "wish list" of all items and labor that will be needed and when. Identify community resources for in-kind donations and potential funding
- ❍ Outline plans for integrating use of your habitat site into the curriculum and across grade levels.

❑ **Now Plant!**

- ❍ Reach out to the community and utilize community resources
- ❍ Involve community partners and interested parents and community members in work parties

❑ **Develop a maintenance plan**

- ❍ Identify maintenance needs: watering, weeding, nest boxes, bird feeders, etc.
- ❍ Involve as many teachers and students as possible...and don't forget your school's maintenance staff
- ❍ Develop a summer maintenance plan

❑ **Certify your successful habitat site with the National Wildlife Federation!**

Resource Guide

The list below highlights helpful references for Schoolyard Habitats projects. In addition to this listing, resource listings–including books, newsletters, videos, World Wide Web Home Page addresses, resource agencies and organizations–are updated on a regular basis for the NWF Backyard Wildlife Habitat program World Wide Web Home Page, where Schoolyard Habitats Project is found. Visit us at http://www.nwf.org or consult NWF's annual Conservation Directory for additional information.

Activities

National Wildlife Federation. *Animal Tracks® Action Packs*; classroom resources helping educators introduce environmental issues across curriculum through Discovery, Awareness, and Action. Action Packs are available for the following topics: Habitat, Northern Forest, Urban Communities, Water, Wetlands, and Endangered Species.

National Wildlife Federation. *Ranger Rick's NatureScope®*; a creative education series designed to help K-8 educators incorporate science and environmental education into their teaching through creative activities.

Cornell, Joseph. *Journey to the Heart of Nature: A Guided Exploration.* 128p. 1995. Dawn Publications.

Cornell, Joseph. *Sharing Nature with Children.* 176p. 1998. Dawn Publications.

Cornell, Joseph. *Sharing the Joy of Nature: Nature Activities for All Ages.* 176p. 1989. Dawn Publications.

E2: Environment & Education. *Habitat and Biodiversity: Teacher Resource Guide.* 158p. 1998. Dale Seymour Publications.

Hogan, Kathleen. *Eco-Inquiry: A guide to ecological learning experiences for the upper elementary/middle grades.* 392p. 1994. Kendall Hunt.

Hunken, Jorie. *Ecology for All Ages: Discovering Nature Through Activities for Children and Adults.* 194p. 1994. Globe Pequot Press.

Lingelbach, Jenepher (ed.). *Hands-On Nature: Information and Activities for Exploring the Environment with Children.* 233p. 1989. Vermont Institute of Natural Science.

Project Learning Tree: *Environmental Education Pre K- 8 Activity Guide.* 402p. 1996. The American Forest Foundation.

Project WET:*K-12 Curriculum and Activity Guide.* 516p. 1995. The Watercourse and The Council for Environmental Education.

Project WILD. *K-12 Activity Guide.* 278p. 1986. Western Regional Environmental Education Council, Inc.

WOW! The Wonders of Wetlands: An Educator's Guide. 330p. 1995. Environmental Concern Inc. and The Watercourse.

Kiefer, Joseph and Martin Kemple. *Digging Deeper: Integrating Youth Gardens Into Schools & Communities.* 144p. 1998. Food Works and Common Roots Press.

Moore, Robin C. And Herb H. Wong. *Natural Learning: Creating Environments for Rediscovering Nature's Way of Teaching.* 280p. 1997. MIG Communications.

How To

Ocone, Lynn and Eve Pranis. *National Gardening Association Guide to Kids' Gardening.* 148p. 990. John Wiley and Sons, Inc.

Schiff, Paul and Dr. Cindi Smith-Walters. *WILD School Sites: A Guide to Preparing for Habitat Improvement Projects on School Grounds.* 64p. 1994. Project WILD.

Stine, Sharon. *Landscapes for Learning: Creating Outdoor Environments for Children and Youth.* 244 p. 1997. John Wiley & Sons, Inc.

Wyzga, Marilyn C. *Homes for Wildlife: A Planning Guide for Habitat Enhancement on School Grounds.* 225p. 1998. New Hampshire Fish and Game Department.

Habitat Planning and Landscaping

California Center for Wildlife Staff. *Living With Wildlife.* 352p. 1994. Sierra Club Books.

Druse, Ken and Margaret Roach. *The Natural Habitat Garden.* 248p. 1994. Crown Publishing Group.

Henderson, Carroll. *Landscaping for Wildlife.* 145p. 1994. Minnesota Dept. of Natural Resources.

Marinelli, Janet, ed. *The Environmental Gardener.* 96p. 1992. Brooklyn Botanic Garden, Inc.

Moore, Robin C. *Plants for Play: A Plant Selection Guide for Children's Outdoor Environments.* 121 p. 1993. MIG Communications.

Schneck, Marcus. *Your Backyard Wildlife Garden.* 160p. 1992. Rodale Press.

Seidenberg, Charlotte: *The Wildlife Garden.* 224p. 1995. University Press of Mississippi.

Stein, Sara. *Noah's Garden.* 256p. 1993. Houghton Mifflin.

Tufts, Craig. *The Backyard Naturalist.* 79p. 1988. National Wildlife Federation.

Tufts, Craig and Peter Loewer. *The National Wildlife Federation's Guide to Gardening for Wildlife.* 192p. 1995. Rodale Press.

Environmentally-Sensible Landscaping

Appelhof, Mary. *Worms Eat My Garbage.* 100p. 1982. Flowerfield Enterprises.

Beaubaire, Nancy, ed. *Native Perennials: North American Beauties.* 111p. 1996. Brooklyn Botanic Gardens, Inc.

Bowles, John Paul, ed. *Soils.* 88p. 1990. Brooklyn Botanic Garden, Inc.

Burrell, C. Colston, ed. *The Natural Water Garden: Pools, Ponds, Marshes & Bogs for Backyards Everywhere.* 111p. 1997. Brooklyn Botanic Garden, Inc.

Burrell, C. Colston, ed. *Woodland Gardens: Shade Gets Chic.* 111p. 1995. Brooklyn Botanic Garden, Inc.

Daniels, Stevie. *The Wild Lawn Handbook.* 223p. 1995. Macmillan Publishing Co.

Ellefson, Connie, and Tom Stephens and Doug Welsh. *Xeriscape Gardening.* 323p. 1992. Macmillan Publishing Co.

Marinelli, Janet, ed. *Going Native: Biodiversity in Our Own Backyards.* 112p. 1994. Brooklyn Botanic Garden.

Martin, Deborah L. and Grace Gershuny, eds. *The Rodale Book of Composting.* 278p. 1992. Rodale Press.

Olkowski, William, Sheila Daar, and Helga Olkowski. *Common-Sense Pest Control.* 715p. 1991. Taunton Press.

Roach, Margaret, ed. *The Natural Lawn & Alternatives.* 95p. 1995. Brooklyn Botanic Garden.

Sawyers, Claire, ed. *Gardening with Wildflowers and Native Plants.* 96p. 1990. Brooklyn Botanic Garenc, Inc.

Schultz, Warren. *The Chemical-Free Lawn.* 208p, 1989. Rodale Press.

Schultz, Warren, ed. *Natural Insect Control: The Ecological Gardener's Guide to Foiling Pests.* 112p. 1994. Brooklyn Botanic Garden, Inc.

Wilson, William H. *Landscaping with Wildflowers and Native Plants.* 96p. 1985. Ortho Information Services.

Zuk, Judith D., ed. *Trees: A Gardener's Guide.* 96p. Brooklyn Botanic Garden, Inc.

Attracting Specific Wildlife Groups

Bats

Tuttle, Merlin D. *America's Neighborhood Bats.* 104p. 1988. University of Texas Press.

Tuttle, Merlin D. and Donna L. Hensley. *The Bat House Builder's Handbook.* 34p. 1993. Bat Conservation International.

Birds

Dennis, John. *The Complete Guide to Bird Feeding.* 292p. 1994. Alfred A. Knopf.

Halpin, Anne. *For the Birds!* 96p. 1996. Henry Holt.

Harrison, George H. *Garden Birds of America. 1996. Willow Creek Press.*

Kress, Stephen W. *The Bird Garden.* 176p. 1998. Dorling Kindersley.

McKinley, Michael and John Dennis. *How to Attract Birds.* 96p. 1995. Ortho Information Services.

Butterflies and Hummingbirds

Agilvsgi, Geyata. *Butterfly Gardening for the South.* 360p. 1991. Taylor Publishing.

Dennis, John and Matthew Tekulsky. *How to Attract Hummingbirds and Butterflies.* 112p. 1991. Ortho Information Services.

Pyle, Robert J. *Audubon Society Handbook for Butterfly Watchers.* 274p. 1984. Charles Scribners Sons.

Stokes, Donald W. and Lillian Q. Stokes. *The Hummingbird Book.* 87p. 1989. Little, Brown and Co.

Wilson, E.O. and Miriam Rothschild, et al. *Butterfly Gardening*. 208p. 1998. Sierra.

Xerces Society Staff. *Butterfly Gardening*. 192p. 1990. Sierra Club Books.

Identification, Habitats, and Behavior

The Peterson Series Field Guides; over 55 titles, covering North America. Houghton Mifflin.

The Audubon Society Nature Guides; series which focuses on ecosystems and habitat types. Alfred A. Knopf.

The Stokes Nature Guides; including three volumes of Guide to Bird Behavior. Little, Brown, and Co.

Fundraising/Grant sources

America the Beautiful Fund. 1511 K Street, NW Suite 611, Washington, D.C. 20005 (202)638-1649

Environmental Protection Agency (EPA), Headquarters Office of Environmental Education, 401 M Street, SW MC 1707, Washington, D.C. 20460 (202)260-8619

Human-I-Tees Fundraisers. 400 Columbus Avenue, Valhalla, NY 10595 1-800-A-PLANET

National Science Foundation (NSF). 4201 Wilson Boulevard, Arlington, VA 22230 (703)306-1234

Phillips Petroleum Environmental Partnership Awards (PEP), Phillips Petroleum Company Center for Environmental Education (CEE), College of Education Oklahoma State University, 304 Willard Hall, Stillwater, OK 74078

Project WILD National Office, WILD School Sites, 707 Conservation Lane, Gaithersburg, MD 20878 (301)527-8900

Sea World of Florida, Education Department, 7007 Sea World Drive, Orlando, FL 32832 (407)363-2389

Toyota TAPESTRY Grants for Teachers, c/o National Science Teachers Association (NSTA) 1840 Wilson Boulevard, Arlington, VA 22201

Youth Garden Grants, National Gardening Association, 180 Flynn Avenue, Burlington, VT 05401 1-800-538-7476

Wild Ones - Natural Landscapers, LTD., Lorrie Otto Seeds for Education Funds, P.O. Box 23576, Milwaukee, WI 53223-0576

Environmental Grantmaking Foundations Directory, P.O. Box 22770, Rochester, NY, 14692-2770, 1-800-724-1874

The Foundation Center, 1001 Connecticut Ave., NW Suite 938, Washington, D.C., 20036 (202)331-1400

Grants for Teachers: A Guide to Federal and Private Fundraising, Capital Publications, P.O. Box 1453, 22313

Join NWF's Schoolyard Habitats Practitioners' listserv!!

schoolyard habitats®
NATIONAL WILDLIFE FEDERATION®

This is a great outlet for teachers and others interested in the **Schoolyard Habitats** project to get information and help, and to share ideas.

To subscribe send an e-mail to: **majordomo@igc.org**; leave the subject line blank and in the body type: subscribe syh-exchange. You will receive two blank e-mails in return. The second message will include directions on how to confirm your subscription.

If you have trouble subscribing send an e-mail message to: **stowell@nwf.org**.

BEST COPY AVAILABLE

On-line resources

National Wildlife Federation
<www.nwf.org/habitats>

1,000 Friends of Frogs
<cgee.hamline.edu/frogs>

American Horticultural Society
<www.ahs.org>

American Community Gardening Association
<www.communitygarden.org>

Bat Conservation International
<www.batcon.org>

Center for Environmental Education
<www.cee-ane.org>

Classroom Birdwatch
<birdsource.cornell.edu/cfw/>

Earth Partnership Program -
UWI-Madison Arboretum
<www.wisc.edu/aboretum>

Environmental Protection Agency
<www.epa.gov>

Evergreen Foundation
<www.evergreen.ca>

Gardens for Growing People
<www.svn.net/growpepl/index2.htm>

Green Brick Road
<www.gbr.org>

Green Teacher
<www.web.ca/~greentea/>

Journey North
<www.learner.org/jnorth>

Monarch Watch
<www.MonarchWatch.org>

National Gardening Association
<www2.garden.org/nga>

National Association of Conservation Districts
<solstice.crest.org/renewables/eerg/
nacd.html>

Lady Bird Johnson Wildflower Center
<www.wildflower.org>

Native Plant Conservation Initiative
<www.nps.gov/plants>

North American Association for
Environmental Education
<eelink.umich.edu/naaee.html>

Project WILD: WILD School Sites
<eelink.umich.edu/wild/>

Project WET
<www.montana.edu:80/wwwwet/>

Project Learning Tree
<www.plt.org>

Roger Tory Peterson Institute of Natural History
<www.rtpi.org>

School Nature Area Project (SNAP)
<www.stolaf.edu/other/snap/>

Using the Outdoor to Teach Experiential
Science - NC State Museum of
Natural Sciences
<museums.mdmi.com/naturalsciences>

The Butterfly Website
<ButterflyWebSite.com/>

Wild Ones
<www.for-wild.org>

NATIONAL
WILDLIFE
FEDERATION®

Schoolyard Habitats
National Wildlife Federation
8925 Leesburg Pike
Vienna, VA 22184-0001

(703) 790-4100

printed with soy inks on unbleached recycled paper with 100% post-consumer waste